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(71) Applicant(s)  
Douglas Kitchener Gatward  
126 Finchley Rd, LONDON, NW3 5HT, United Kingdom

(72) Inventor(s)  
Douglas Kitchener Gatward

(74) Agent and/or Address for Service  
Douglas Kitchener Gatward  
126 Finchley Rd, LONDON, NW3 5HT, United Kingdom

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B60L 8/00, B60K 1/00

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B7H HA HDB H626 H713 H714 H741

(56) Documents Cited  
GB 2249529 A US 5039930 A US 4871042 A  
US 4516647 A

(58) Field of Search  
UK CL (Edition L ) B7H HDB  
INT CL<sup>5</sup> B60K 1/00 16/00, B60L 8/00 11/18, B62M  
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(54) Battery-powered bicycle.

(57) The bicycle, or other light weight vehicle, has a removable battery cassette which is rechargeable from a solar panel 2 or a domestic mains charger 3 controlled by a timer 4. A fully-charged sensor 6 may be provided. The battery cassette 1 is suitable for use with a vending machine system for the supply of exchange recharged batteries. The bicycle may be foldable and may be powered while folded, for ease of handling.

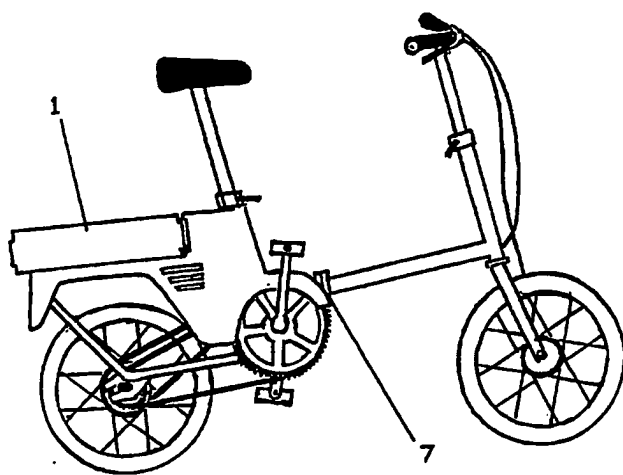


FIG 1

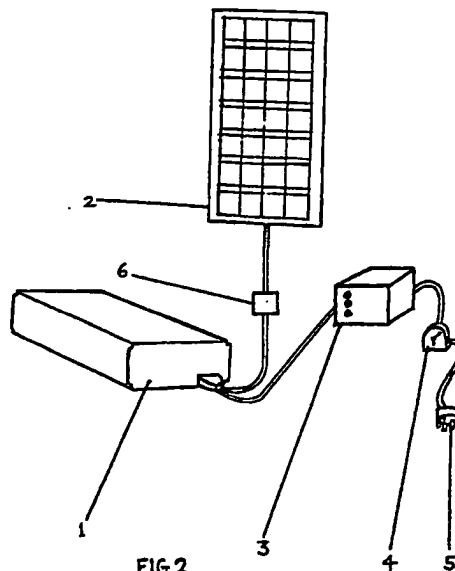


FIG 2

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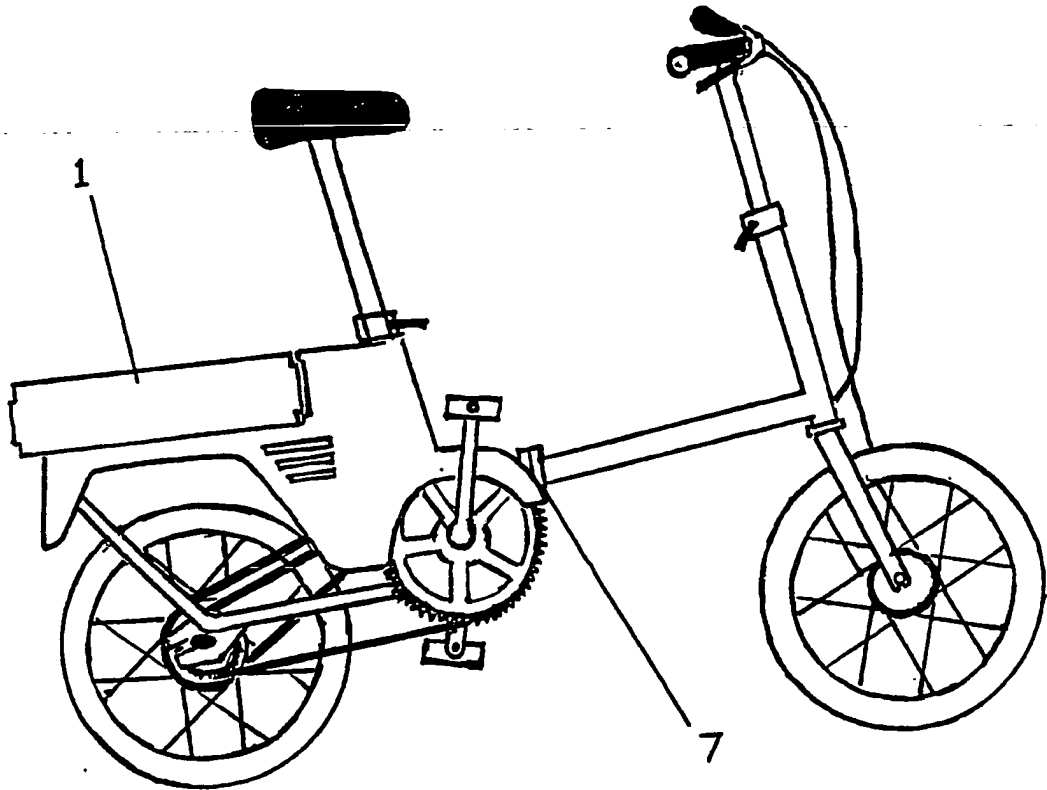


FIG 1

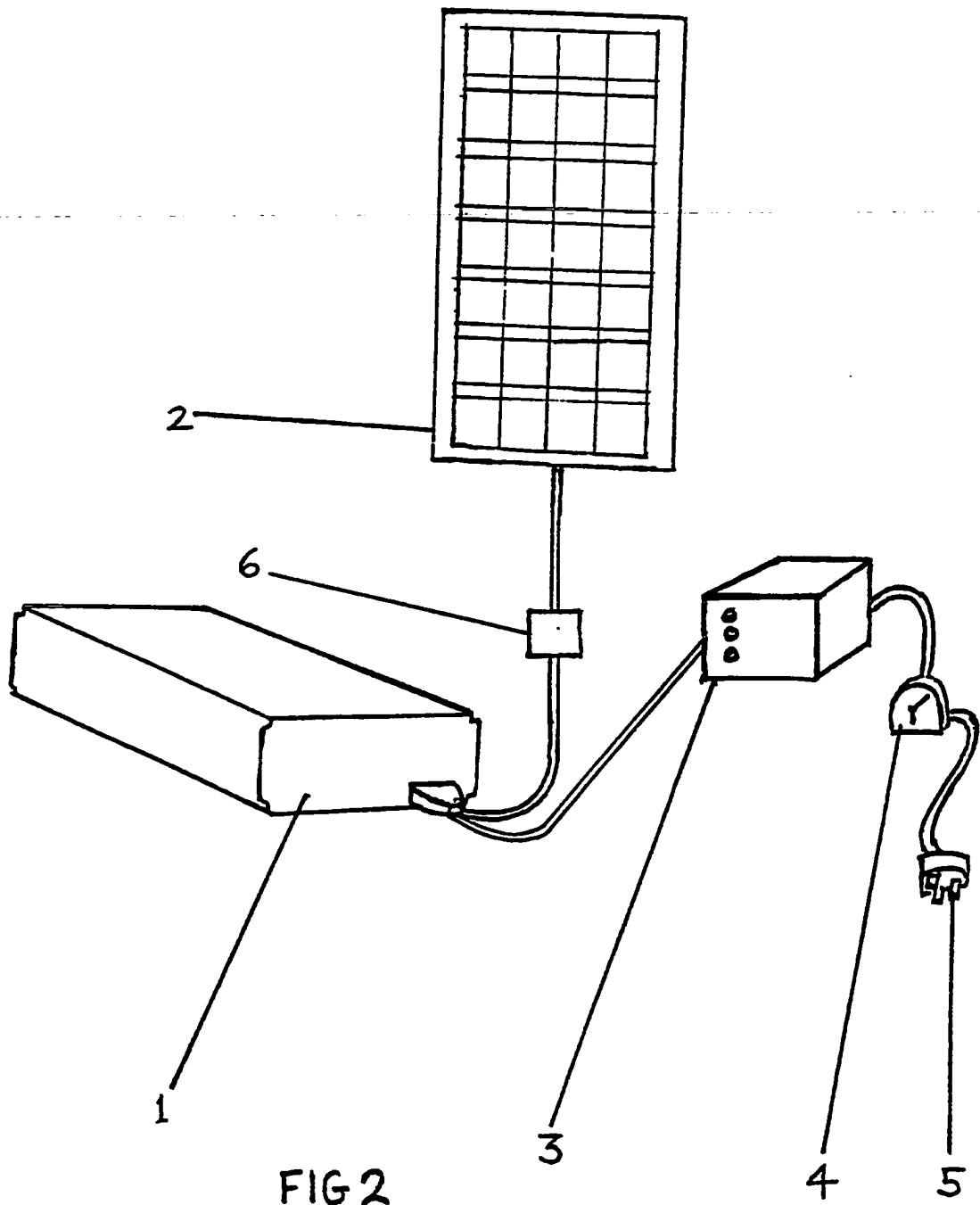


FIG 2

ELECTRIC BICYCLE AND POWER SYSTEM FOR LIGHTWEIGHT VEHICLES

Invention 1):

A battery powered cycle, or lightweight wheeled vehicle, with removable battery cassette so designed as to work in conjunction with a solar panel for recharging during daylight, backed up with a conventional mains charging system with a timer and fully charged sensor control to ensure a full recharge in a pre-determined time period, without any unnecessary use of mains electricity.

Invention 2):

A battery powered cycle, or lightweight wheeled vehicle, with removable battery cassette, suitable for use with a vending machine system, that can supply an exchange recharged battery cassette, which may optionally be recharged by solar power; with mains electricity backup.

Invention 3):

A folding bicycle, with removable battery cassette, so designed to allow the cycle to be easily wheeled, and optionally be carried with separate weight in each hand; of the cycle and separate battery cassette: with the option of using the battery in situ to power the wheels to allow ease of handling whilst folded.

Fig. 1 shows the battery powered cycle with removable battery cassette.

Fig. 2 shows the battery recharging system.

Key to reference numerals:

1. Removable battery cassette
2. Solar panel
3. Mains charger with fully charged sensor
4. Timer controlling mains charger
5. Plug connecting mains electricity source
6. Optional fully charged sensor
7. Fold; allows bike to fold axle to axle; to allow handlebars to be turned sideways to be used as handle for "trolleying".

**CLAIMS**

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- 1) A battery powered cycle, or lightweight wheeled vehicle, with removable battery cassette so designed as to work in conjunction with a solar panel for recharging during daylight, backed up with a conventional mains charging system with a timer and fully charged sensor control to ensure a full recharge in a pre-determined time period, without any unnecessary use of mains electricity.
- 2) A battery powered cycle, or lightweight wheeled vehicle, with removable battery cassette, suitable for use with a vending machine system, that can supply an exchange recharged battery cassette, which may optionally be recharged by solar power; with mains electricity backup.
- 3) A folding bicycle, with removable battery cassette, so designed to allow the cycle to be easily wheeled, and optionally be carried with separate weight in each hand; of the cycle and separate battery cassette: with the option of using the battery in situ to power the wheels to allow ease of handling whilst folded.

**Patents Act 1977**  
**Examiner's report to the Comptroller under**  
**Section 17 (The Search Report)**

Application number

GB 9212960.0

**Relevant Technical fields**

(i) UK CI (Edition L ) B7H (HDB)

(ii) Int CI (Edition 5 ) B60L 8/00,11/18; B62M 23/02;  
H02J 7/34; B60K 1/00,16/00

**Databases (see over)**

(i) UK Patent Office

(ii) ONLINE DATABASE: WPI

**Search Examiner**

J L TWIN

**Date of Search**

21 JULY 1993

Documents considered relevant following a search in respect of claims 1

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
	GB 2249529 (HSU et al)	1
	US 5039930 (COLLIER et al)	1
	US 4871042 (HSU et al) - see eg column 3, lines 24-45	1
	US 4516647 (NOVAK)	1

Category	Identity of document and relevant passages	Relevant to claim(s)

### Categories of documents

**X:** Document indicating lack of novelty or of inventive step.

**Y:** Document indicating lack of inventive step if combined with one or more other documents of the same category.

**A:** Document indicating technological background and/or state of the art.

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**E:** Patent document published on or after, but with priority date earlier than, the filing date of the present application.

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